

separated, it would follow that the weakest *electrical* attraction was stronger than, if not the strongest, yet very strong *chemical* attraction, namely, such as exists between oxygen and hydrogen, potassium and oxygen, chlorine and sodium, acid and alkali, etc., a consequence which, although perhaps not impossible, seems in the present state of the subject very unlikely.

243. The view which M. de la Rive has taken (225), and also MM. Riffault and Chompre (221), of the manner in which electro-chemical decomposition is effected, is very different to that already considered, and is not affected by either the arguments or facts urged against the latter. Considering it as stated by the former philosopher, it appears to me to be incompetent to account for the experiments of decomposition against surfaces of air (198, 205) and water (231), which I have described; for if the physical differences between metals and humid conductors, which M. de la Rive supposes to account for the transmission of the compound of matter and electricity in the latter, and the transmission of the electricity only with the rejection of the matter in the former, be allowed for a moment, still the analogy of air to metal is, electrically considered, so small, that instead of the former replacing the latter (198), an effect the very reverse might have been expected. Or if even that were allowed, the experiment with water (231) at once sets the matter at rest, the decomposing pole being now of a substance which is admitted as

competent to transmit the  
assumed compound of electricity and  
matter.

244. With regard to the views  
of MM. Riffault and Chompre\*  
(221), the occurrence of  
decomposition alone in the  
*course* of  
the current is so contrary to  
the well-known effects  
obtained in  
the forms of experiment  
adopted up to this time, that  
it must  
be proved before the  
hypothesis depending on it  
need be considered.

245. The consideration of  
the various theories of  
electro-  
chemical decomposition,  
whilst it has made me  
diffident, has  
also given me confidence to  
add another to the number;  
for it  
is because the one I have to  
propose appears, after the  
most  
attentive consideration, to  
explain and agree with the  
immense  
collection of facts belonging  
to this branch of science,  
and to  
remain uncontradicted by, or  
unopposed to, any of them,  
that  
I have been encouraged to  
give it.

246. Electro-chemical  
decomposition is well known  
to depend  
essentially upon the *current*  
of electricity. I have shown  
that  
in certain cases (in) the  
decomposition is  
proportionate to the